Loggerhead turtle

Caretta caretta

Contributors: Sally Murphy and DuBose Griffin


Photo by SC DNR

DESCRIPTION

Taxonomy and Basic Description

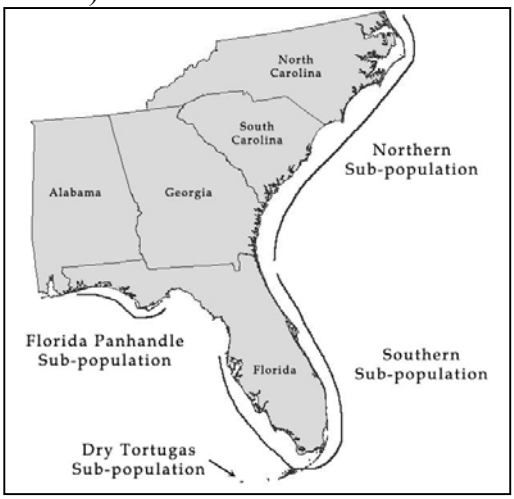
The loggerhead was described by Linnaeus (1758) and named *Testudo caretta.* Over the next two centuries more than 35 names were applied to the species (Dodd 1988), but there is now general agreement on *Caretta caretta* as the valid name. The carapace, head scales and dorsal scales of the flippers of adult and juvenile loggerheads are reddish-brown. The plastron, neck, ventral surface of the flippers and margins of the head scales are yellow, but with some variation. Adult loggerheads in the southeastern United States have a mean straight carapace length of 92 cm (36.2 inches) and weigh about 113 kg (249 pounds) (NMFS, USFWS 1991).


Photo by Jim Richardson

Hatchlings lack the reddish tinge and vary from light to dark brown dorsally. Both pairs of flippers are dark brown and have distinct white margins. The plastron and other ventral surfaces are a dull tan. Hatchlings have three dorsal keels and two plastral keels. The mean straight carapace length is about 45 mm (1.8 inches); juvenile loggerheads weight about 20 g (0.7 ounces) (NMFS & USFWS 1991).

Status

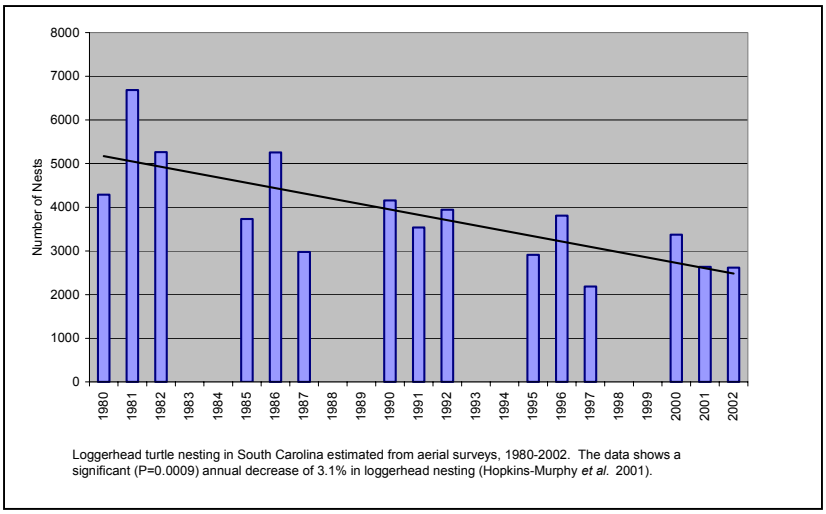
The loggerhead is federally listed as threatened. The population nesting in the United States is comprised of four nesting assemblages, or sub-populations. The northern sub-population, which nests from northern Florida to North Carolina, is declining. The southern sub-population, which is ten times larger, is stable or increasing. Status of the two remaining sub-populations is unknown (TEWG 1998; TEWG 2000).



POPULATION DISTRIBUTION AND SIZE

The Northern sub-population is the second largest in the United States. Annual nesting totals ranged from about 3,629 to 6,642 between 1989 and 1998, representing approximately 1,287 nesting females per year (TEWG 1998). South Carolina nesting effort represents over 65 percent of the northern sub-population. However, the South Carolina nesting population has shown a 60 percent decline since the early 1980's (Hopkins-Murphy et al. 2001; SCDNR unpub. data).

Research by the South Carolina Department of Natural Resources (SCDNR) indicates that juvenile loggerheads in coastal waters off South Carolina, Georgia and northern Florida are more abundant by an order of magnitude than they were in the late 1970's and early 1980's (Maier et al. 2004). If most of the juveniles are from the southern sub-population, then this increase of juveniles will not be realized in future years in the South Carolina nesting population.



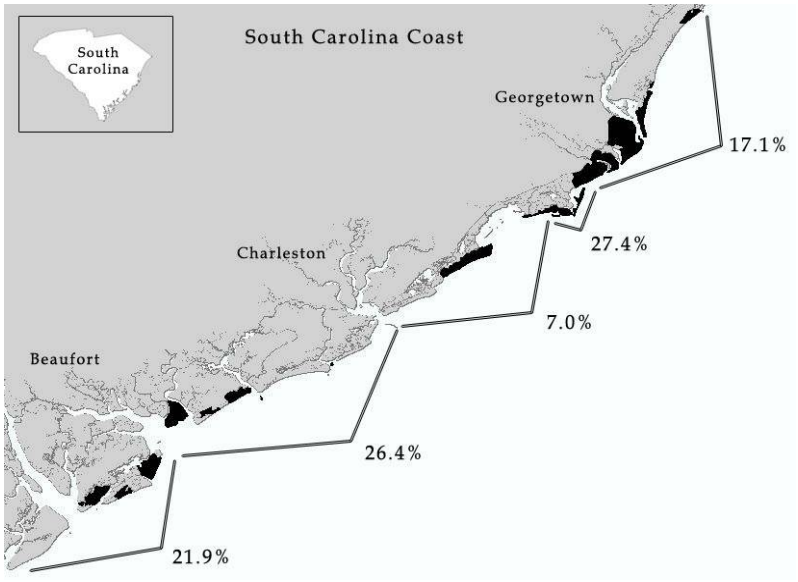
Loggerhead turtle nesting in South Carolina estimated from aerial surveys, 1980-2002. The data shows a significant (P=0.0009) annual decrease of 3.1% in loggerhead nesting (Hopkins-Murphy *et al.* 2001).

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Adult females inhabit coastal waters during the nesting season, from mid May to mid August; during this time, they are not feeding. After nesting, females migrate to foraging areas both north and south of their nesting beaches. The predominate pattern for South Carolina females is to move to the mid Atlantic Bight until November and then return south of Cape Hatteras during winter. In spring, they return to their same foraging area as the previous season. They repeat this until it is time for their breeding migration back to the nesting beach.

Loggerhead turtles nest on ocean beaches within the continental United States from Texas to Virginia. Major nesting concentrations are found on the coastal islands of North Carolina, South Carolina and Georgia, and on the Atlantic and Gulf coasts of Florida. Nests are typically made between the high tide line and the dune front (NMFS, USFWS 1991).

Juveniles from the various sub-populations mix on foraging grounds, which include estuarine, neritic and continental shelf waters in the Gulf of Mexico and the eastern seaboard. Juveniles, 40 to 91 cm (15.7 to 35.8 inches) in length are found in South Carolina on a seasonal basis from early April to early November (NMFS, USFWS, 1991).



Darkened areas represent federal, state and private protected nesting beaches. Percent of nesting for each section of coast from 1995 to 1997 is also shown. Three smaller protected areas, rarely used for nesting, are not included

CHALLENGES

Because of their highly migratory behavior, conservation efforts for loggerhead populations in one country and/or state may be offset by activities in another.

Major challenges faced by loggerheads include loss or degradation of nesting habitat from coastal development and beach armoring, although beach armoring is no longer allowed in South Carolina. Of the 303 km (188.3 miles) of coastline in South Carolina, about 70 percent is suitable nesting habitat (Hopkins-Murphy et al. 1999). Of the 30 percent that is not suitable, two-thirds of it is the Grand Strand in Horry County. The other third is a combination of natural eroding beaches and previously built sea walls. Even if a suitable sandy beach is available, nesting can be aborted because of beach furniture and equipment blocking access to nest sites. Beach vitex, an exotic introduced plant has recently taken over areas in northern Georgetown and Horry Counties. Its aggressive growth and impenetrable roots quickly cover the dunes, making them unsuitable for loggerhead nesting (R. Westbrooks pers. com.).

Uninformed visitors using flashlights at night can cause females to avoid certain areas and beachfront lighting will disorient hatchlings. Excessive predation by native and non-native predators as well as erosion and storm events, destroy nests (NMFS, USFWS 1991). Feral hogs are reproducing and destroying loggerhead and bird nests, as well as negatively impacting the maritime forest community on some coastal islands (NMFS, USFWS 1991). Killing of adults is rare, but human poaching of turtle nests with clandestine markets for eggs may continue to be a problem (NMFS, USFWS 1991).

Another major impact on all sea turtles results from incidental take from commercial fishing operations. In a 1990 study, the National Academy of Sciences estimated that between 5,000 and 50,000 loggerheads were killed annually by the shrimping fleet in the southeastern Atlantic and Gulf of Mexico (National Research Council 1990). Other trawl fisheries are known to capture sea turtles, but capture rates are currently not available. In South Carolina, these fisheries include: blue crab, whelk and cannonball jellyfish. Although incidental take has decreased in recent years, this continues to be a major problem for sea turtles. The shark longline fishery, which operates all year long off the south Atlantic, may impact loggerheads in the neritic environment (Lewison et al.2004). Loggerheads have been found entangled in a wide variety of materials including fishing line, rope, onion sacks and discarded netting (NMFS, USFWS 1991). They also ingest many types of marine pollution and debris, resulting in gut blockage (NMFS, USFWS 1991). Watercraft and ship strikes are becoming more prevalent as more and more people move to the coast. Natural mortality factors include predation by large sharks, disease and parasites (NMFS, USFWS 1991).

Degradation of foraging habitat by physical damage occurs when there is trawling over live bottoms. Clam dredges can cause similar damage in the more offshore areas. Over harvesting of prey species, such as horseshoe crabs and whelks can deprive loggerheads of their food resource, resulting in longer remigration intervals between nesting (Bjorndal 1997). Data on the quantity and quality of foraging habitat is scarce.

CONSERVATION ACCOMPLISHMENTS

Some conservation accomplishments achieved for this species span a regional scale by federal agencies while others were made locally in South Carolina (Hopkins-Murphy 1987). The Sea Turtle Stranding and Salvage Network (STSSN) was established in 1980 to document the number of sea turtle carcasses that wash ashore. Nest protection projects were established along the South Carolina coast from 1981 to the present to increase hatchling productivity (Hopkins-Murphy et al. 1999). Over 70 percent of the nests laid in South Carolina are under nest protection management and achieve at least a 60 percent hatching success (Hopkins-Murphy et al. 1999). Statewide aerial beach surveys began in 1980 to provide a standard index for monitoring the nesting population (Hopkins-Murphy et al. 2001).

The loggerhead turtle was designated the South Carolina State Reptile in 1988 (Act # 588, June 1, 1988). South Carolina became the first state to enact Turtle Excluder Device (TED) regulations in 1988. Federal regulations requiring TEDs in all waters, at all times came into effect in 1991. In 1991, South Carolina also became the first state to require the U.S. Army Corps of Engineers (USACE) to restrict hopper dredge channel maintenance to the winter months. South Carolina became the first state to enlarge TED openings in 2002. Federal regulations requiring larger TED openings came into effect in 2003. The US Fish and Wildlife Service produced and distributed large "Lights Out" signs that were erected on roadways to beaches. Volunteers have also produced numerous articles to inform beach residents and visitors about the necessity to have lights out during the nesting and hatching seasons.

Finally, just this year, through a partnership of resources of NOAA Fisheries, SCDNR's environmental education program and the South Carolina Department of Education, all public schools in this state have been provided copies of the interactive DVD "Journey of the Loggerhead."

Currently, Endangered Species Act Section 6 funding from both the U.S. Fish and Wildlife Service and the National Marine Fisheries Service provides program support for the South Carolina marine turtle conservation program.

CONSERVATION ACTIONS

- Protect any remaining significant loggerhead nesting beaches that are still threatened with development through fee simple purchase or conservation easement.
- Ensure that important nesting beaches destroyed by storm events are restored. Collaborate with the US Army Corps of Engineers to complete beach restoration projects.
- Reduce feral hogs populations on coastal islands.
- Ensure that predator control is conducted on important loggerhead nesting beaches.
- Consider establishing Marine Protected Areas based on satellite telemetry data of adult female loggerheads on resident foraging areas. This should be done in collaboration with Atlantic States Marine Fisheries Commission, Fisheries Management Councils and relevant states.
- Collaborate with other states in the southeast on projects to determine the cause(s) of the increase in emaciated loggerheads that stranded in recent years.

- Ensure existing surveys that are providing a standardized index to the population are adequately funded.
- Continue to publicize and promote the lights out efforts and enlist the assistance of electric utility companies when necessary.
- Maintain and improve the SCDNR Marine Turtle Conservation Program web page.

MEASURES OF SUCCESS

As research and management needs are identified, we will initiate projects to address those needs. This was done previously with TED opening sizes when they were found to be too small. Also, this is being done now with the management of beach vitex through the establishment of a Beach Vitex Task Force using funding from a National Fish and Wildlife Foundation grant.

Because there are multiple threats to loggerheads, both on the nesting beaches and at sea, there are likewise multiple management strategies being implemented to bring about their recovery. We may not know which ones have been responsible for recovery of the species, should population numbers on nesting beaches begin to increase. The state will work to implement any Recovery Plan Tasks where South Carolina is the Responsible Agency.

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